

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
25 March 2004 (25.03.2004)

PCT

(10) International Publication Number  
WO 2004/025215 A1

(51) International Patent Classification<sup>7</sup>: G01B 7/012, 3/00

(21) International Application Number:  
PCT/GB2003/003863

(22) International Filing Date:  
5 September 2003 (05.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0221255.3 13 September 2002 (13.09.2002) GB

(71) Applicant (for all designated States except US): REN-  
ISHAW PLC [GB/GB]; New Mills, Wotton-under-Edge,  
Gloucestershire GL12 8JR (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): LUMMES,

Stephen, Edward [GB/GB]; Alma Place, Beech Knapp,  
Burleigh, Stroud, Gloucestershire GL5 2PS (GB). Mc-  
MURTRY, David, Roberts [GB/GB]; Park Farm,  
Stancombe, Dursley,, Gloucestershire GL11 6AT (GB).

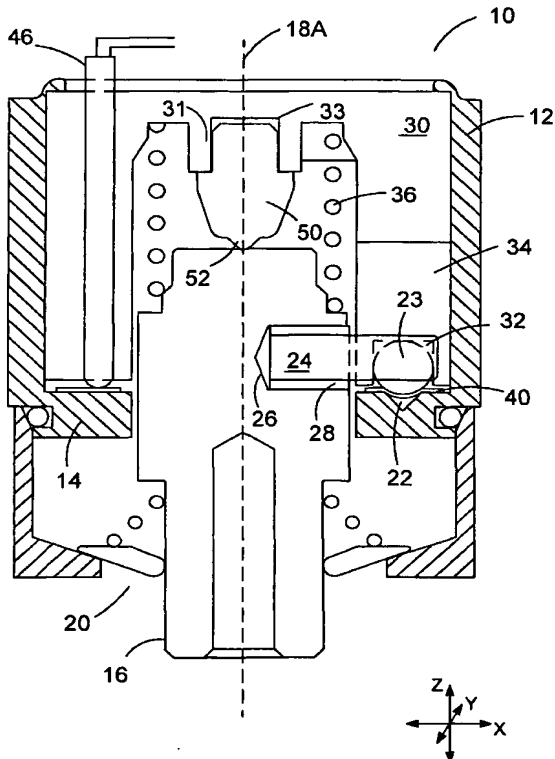
(74) Agent: FOWLER, Maria, Jayne; Renishaw plc, Patent  
Department, New Mills, Wotton-under-Edge, Gloucester-  
shire GL12 8JR (GB).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,  
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: TOUCH PROBE



(57) Abstract: A touch probe (10,50) is disclosed comprising a probe body (12,52) housing first locating elements (23,58), a stylus holder (16,54) having second locating elements (24,57) which co-operate with the first locating elements to locate the stylus holder within the probe body, and a bias (36,68,86) to urge the first and second locating elements into contact, wherein an element (35,50,76,90) is provided to damp motion between the probe body and the stylus holder. The element may slow a relative movement between the locating elements perhaps by resisting the urging of the bias or absorb energy produced by a relative movement between the probe body and stylus holder. The element may be slidably or rotatably mounted with respect to one of the probe head and stylus holder.

WO 2004/025215 A1



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

**Declaration under Rule 4.17:**

- of inventorship (Rule 4.17(iv)) for US only

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Classification No  
PCT/GB 03/03863

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G01B7/012 G01B3/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01B F16F B23Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 967 455 A (RENISHAW PLC) 29 December 1999 (1999-12-29) cited in the application abstract; claim 1; figures 1,2,5-7 paragraphs '0001!', '0002!', '0006!'-'0011!	1-3, 12
Y	US 5 623 766 A (RUCK ET AL.) 29 April 1997 (1997-04-29) abstract; figure 4 column 1, line 64 - line 67 column 2, line 11 - line 14	1-3, 12, 13
Y	US 5 339 535 A (MCMURTRY ET AL.) 23 August 1994 (1994-08-23) abstract; figure 7 column 9, line 49 - line 53 column 2, line 18 - line 36	13
A	--- -/--	1-3

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

16 February 2004

Date of mailing of the international search report

23/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Santos, M

## INTERNATIONAL SEARCH REPORT

Internat<sup>n</sup> ublication No  
PCT/GB 03/03863

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 353 514 A (MCMURTRY) 11 October 1994 (1994-10-11) abstract; figures 1,2 column 1, line 23 - line 66 -----	1-3,12
A	US 4 462 162 A (MCMURTRY) 31 July 1984 (1984-07-31) cited in the application the whole document -----	1-3,13
A	US 4 153 998 A (MCMURTRY) 15 May 1979 (1979-05-15) the whole document -----	1-3,12

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 03/03863

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0967455	A	29-12-1999	EP 0967455 A2 29-12-1999
		JP 2000024860 A	25-01-2000
		US 6275053 B1	14-08-2001
US 5623766	A	29-04-1997	DE 4424225 A1 11-01-1996
		DE 59509461 D1	06-09-2001
		EP 0693669 A2	24-01-1996
		JP 8043066 A	16-02-1996
US 5339535	A	23-08-1994	US 5323540 A 28-06-1994
		US 5505005 A	09-04-1996
		DE 69102283 D1	07-07-1994
		DE 69103930 D1	20-10-1994
		DE 69104215 D1	27-10-1994
		DE 69105862 D1	26-01-1995
		DE 69111830 D1	07-09-1995
		DE 551164 T1	25-11-1993
		DE 551165 T1	25-11-1993
		DE 598709 T1	17-11-1994
		EP 0445945 A1	11-09-1991
		EP 0470234 A1	12-02-1992
		EP 0551164 A1	14-07-1993
		EP 0551165 A1	14-07-1993
		EP 0598709 A1	25-05-1994
		EP 0654651 A1	24-05-1995
		WO 9113316 A1	05-09-1991
		JP 4339205 A	26-11-1992
		JP 3004050 B2	31-01-2000
		JP 4506706 T	19-11-1992
		US 5353514 A	11-10-1994
		US 5491904 A	20-02-1996
		US 5669152 A	23-09-1997
		US 5146691 A	15-09-1992
		US 5345690 A	13-09-1994
		US 5253428 A	19-10-1993
		DE 69201985 D1	18-05-1995
		EP 0501710 A1	02-09-1992
		JP 2510804 B2	26-06-1996
		JP 4369401 A	22-12-1992
		DE 69217548 D1	27-03-1997
		EP 0566719 A1	27-10-1993
		EP 0750171 A2	27-12-1996
		WO 9309398 A1	13-05-1993
		JP 6503652 T	21-04-1994
		JP 3279317 B2	30-04-2002
		US 5404649 A	11-04-1995
		US 5327657 A	12-07-1994
		WO 9214987 A1	03-09-1992
US 5353514	A	11-10-1994	US 5253428 A 19-10-1993
		US 5491904 A	20-02-1996
		US 5669152 A	23-09-1997
		DE 69102283 D1	07-07-1994
		DE 69103930 D1	20-10-1994
		DE 69104215 D1	27-10-1994
		DE 69105862 D1	26-01-1995
		DE 69111830 D1	07-09-1995
		DE 551164 T1	25-11-1993

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/03863

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5353514	A		DE 551165 T1	25-11-1993
			DE 598709 T1	17-11-1994
			EP 0445945 A1	11-09-1991
			EP 0470234 A1	12-02-1992
			EP 0551164 A1	14-07-1993
			EP 0551165 A1	14-07-1993
			EP 0598709 A1	25-05-1994
			EP 0654651 A1	24-05-1995
			WO 9113316 A1	05-09-1991
			JP 4339205 A	26-11-1992
			JP 3004050 B2	31-01-2000
			JP 4506706 T	19-11-1992
			US 5323540 A	28-06-1994
			US 5505005 A	09-04-1996
			US 5146691 A	15-09-1992
			US 5339535 A	23-08-1994
			US 5345690 A	13-09-1994
US 4462162	A	31-07-1984	DE 3279249 D1	05-01-1989
			EP 0068899 A2	05-01-1983
			JP 1039522 B	22-08-1989
			JP 1556462 C	23-04-1990
			JP 58044302 A	15-03-1983
US 4153998	A	15-05-1979	GB 1445977 A	11-08-1976
			CH 584884 A5	15-02-1977
			CH 594230 A5	30-12-1977
			DE 2347633 A1	04-04-1974
			DE 2365984 A1	14-04-1977
			DE 7730258 U1	16-02-1978
			IT 1003537 B	10-06-1976
			JP 1266244 C	27-05-1985
			JP 49094370 A	07-09-1974
			JP 58017402 B	07-04-1983
			JP 57052604 U	26-03-1982
			US 4270275 A	02-06-1981
			JP 1388652 C	14-07-1987
			JP 59176602 A	06-10-1984
			JP 61037561 B	25-08-1986
			JP 59170704 A	27-09-1984
			JP 55000492 A	05-01-1980
			JP 58179306 A	20-10-1983